

The rapid shallow breathing index and its predictive accuracy measured under five different ventilatory strategies in the same patient group (accepted)

邊苗瑛

Mauo-Ying Bien; You Shui Lin; Huei-Guan Shie; You-Lan

Yang; Chung-Hung Shih; Jia-Horng Wang; Kuo-Chen Cheng

摘要

Abstract

The rapid shallow breathing index (RSBI) is commonly used clinically for predicting the outcome of weaning from mechanical ventilation. We compared the RSBI and its predictive accuracies measured under 5 ventilatory strategies before weaning trials. Ninety-eight patients were included and divided into successful ($n = 71$) and failed ($n = 27$) groups based on their weaning outcomes. The RSBI was randomly measured when patients spontaneously breathed 21% O₂ with no ventilator support (the control strategy) or were connected to ventilator breathing with 21% or 40% O₂ and 0 or 5 cmH₂O of continuous positive airway pressure (CPAP). We found that the RSBI values did not exhibit significant differences among the 4 ventilator strategies, but all were higher than that of the control; this remained valid in the non-chronic obstructive pulmonary disease (COPD) subgroup, but not in the COPD subgroup. Values of the area under the receiver operating characteristic curve of the RSBI for the 5 strategies were 0.51~0.62 with no significant difference between any 2 strategies. The incidences of adverse reactions (respiratory rate ≥ 35 breaths/min or oxygen saturation $\leq 89\%$ for ≥ 1 min) were relatively high for the 21% O₂-0 and 5 cmH₂O CPAP groups (20 patients each) and low for the 40% O₂-5 cmH₂O CPAP group (2 patients). We concluded that RSBI values increased with the use of a ventilator, but not with additional applications of 40% O₂ and/or 5 cmH₂O CPAP. Their accuracies for predicting weaning outcome were unaltered by any of these interventions, but the incidence of adverse reactions increased with the use of the ventilator and decreased with additional 40% O₂ supplementation..